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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

WILLS, MONIQUE M

ART UNIT PAPER NUMBER

1746

DATE MAILED: 02/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/930,394	COLBORN <i>eb</i>	
	Examiner	Art Unit	
	Wills M Monique	1746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-43 is/are rejected.
- 7) ☒ Claim(s) 2 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Amendment

This Office Action is responsive to the amendment filed December 9, 2003. The objection of claim 15 under 37 CFR 1.75(c), for being of improper dependent form is overcome. However, claim 2 is objected under 37 CFR 1.75(c), for failing to further limit the subject matter of a previous claim. Additionally, upon further consideration, the allowable subject matter of claims 2-5, 10, 15, 16, 23, 25-30 & 32 indicated in the previous office action has been withdrawn, and new grounds of rejection have been made. The following rejections have been overcome:

- Claims 1, 6-9, 11-14, 31 & 33-39 as being rejected under 35 U.S.C. 102(e) as being anticipated by Faris et al. 6,558,829.
- Claim 40 as being rejected under 35 U.S.C. 102(e) as being anticipated by Hockaday U.S. Patent 6,326,097.
- Claims 17-22 rejected under 35 U.S. C. 103(a) as being as being unpatentable over Faris et al. as applied to claim 1, in view of Linden (Handbook of Batteries, 2nd Edition).
- Claim 24 rejected under 35 U.S. C. 103(a) as being unpatentable over Faris '829 in view of Hockaday '097.
- Claims 41-43 rejected under 35 U.S. C. 103(a) as being as being unpatentable over Hockaday '097 as applied to claim 40, in view of Linden (Handbook of Batteries, 2nd Edition).

The claims have been newly rejected in light of Applicant's amendment as follows:

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- Claims 1-14, 16, 23-27, 30, 31 & 33-40 are rejected under 35 U.S.C. 102(e) as being Faris et al. U.S. Patent 6,558,829.
- Claims 19-22 & 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Faris et al. U.S. Patent 6,558,829, as applied to claim 1 above, and further in view of Linden (Handbook of Batteries, 2nd Edition).
- Claims 17-18, 26, & 41-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Faris et al. U.S. Patent 6,558,829, as applied to claims 1 & 40 above, and further in view of Faris et al. U.S. Patent 6,544,678.
- Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Faris et al. U.S. Patent 6,558,829, as applied to claim 1 above.
- Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Faris et al. U.S. Patent 6,558,829, in view of Stone U.S. Patent 5,667,908.
- Claims 28-29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite

Claim Objections

Claim 2 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. It appears as though claim 2 should be deleted, as the limitations of said claim have been added to claim 1.

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Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 28-29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "one or more second reactants are present in the power source at the pressure at a time prior to an outage sense time" is of uncertain meaning, rendering the claims vague and indefinite. It is unclear as to how pressure relates to the outage sense time.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-14, 16, 23-27, 30, 31 & 33-40 are rejected under 35 U.S.C. 102(e) as being

Faris et al. U.S. Patent 6,558,829.

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With respect to claims 1,4,16, 23,25,26, 30,33,34 & 40 Faris et al. disclose a plurality of metal-air fuel cell battery subsystems that are connected to a power source and a controller that senses a power output to one or more loads wherein when it is sensed that a load is low and/or out of power, the fuel cell battery system is engaged to recharge (Figure 1 & column 9, lines 15- 67); the fuel cell functions as a regenerating unit when in recharging mode by reversing the electro-chemical reaction that occurred during discharging mode of operation (col.9, lines 35-43); each metal fuel cell comprises a fuel storage unit or first-module housing comprising anode material (col.12, lines 60-65). The Examiner would like to point out that the process of recharging is being interpreted as providing backup power to the system. With respect to claims 2 & 3, the metal fuel cell is the regeneration unit during recharge (col.9, lines 35-43). With respect to claim 4, the reaction product storage unit is equivalent to the first-module that houses consumed anode material (col. 12, lines 59-63). With respect to claim 5, a second reaction product storage unit is equivalent to the second-module that houses consumed cathode material (col. 13, lines 1-5). With respect to claims 6-8 & 35-36, Faris et al. teach that the system is equipped to convert DC power into AC power (column 9, lines 55-60) and that D C power can be converted into another form of DC power (column 10, lines 5-10). With respect to claims 9 & 37-38, Faris et al. teach that the power may stop being supplied to the loads after the controller detects that the metal fuel cell batteries have been recharged (column 10, line 60 - column 11, line 2). The Examiner interprets this as disengaging the system

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from providing power to the loads. With respect to claim 10, Faris et al. teach that the power may stop being supplied to the load after the controller detects that the metal fuel cell batteries have been recharged (col. 10, line 60- col. 11 line 2), and the metal fuel cell functions as the regeneration unit (col. 9, lines 35-43). With respect to claims 11, 12 & 39, Faris et al. teach that the fuel cells can be zinc fuel cells (column 8, lines 39-45). With respect to claims 13 & 14, Faris et al. teach that the metal fuel cell is to be used in portable electronic devices (column 2, lines 44-53). The Examiner would like to point out that these embodiments possess physical support means for the fuel cell and load (see Fig. 4). With respect to claim 30, during discharge mode, oxygen-rich air is permitted to flow through the hollow bore of the cylindrical cathode (col. 21, lines 55-60). With respect to claim 31, Faris et al. teach the use of metal fuel card that are manually loaded and unloaded from the system (abstract), therefore the system does not expel products outside the system during operation they are contained in the cartridges. Therefore, the prior art anticipates the metal air fuel cell set forth. The limitation in claim 1, with respect to the system comprising one or more regeneration units, is considered an inherent property of the fuel cell, because the fuel cell operates as a regeneration unit because the fuel cell is rechargeable, thereby reversing the electro-chemical reactions that occur during discharge mode (col. 9, lines 35-43). Applicant's specification at page 7, lines 15-20 disclose that the fuel cell may function as a regeneration unit when operating in reverse. The limitation in claim 16, with respect to the fuel cell system being configured not to utilize or produce significant

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quantities of flammable fuel or reactant product, is considered to be an inherent property of the fuel cell system, because the fuel cell system employs the same electrochemical materials as Applicant, specifically a zinc metal fuel cell. The limitation in claims 23,27,33 & 40 with respect to storing fuel in a fuel storage unit within a pressure range of about -5psi to about 200psi is considered an inherent property of the fuel storage unit, because this fuel storage unit 613 is open to the atmosphere (Fig. 3) and therefore, is at atmospheric pressure which is 14.69psi. The limitation in claim 24, with respect to the power source comprising fuel that is present in the cell cavities of the power source prior to operative engagement of the one or more fuel cells by the controller to provide power to the one or more loads, is considered an inherent function of the fuel cell system, because the fuel must be pre-loaded into the system prior to providing power to the load. The limitation in claim 25, with respect to the amount of fuel sufficient to provide power to the load at a rate at least ten percent faster than when there is substantially no fuel present is considered inherent function of the fuel cell system, because the fuel cell will provide power 100% faster than when no fuel present in the system. When substantially no fuel is present the power source will not provide power to the load.

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Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Faris et al. U.S. Patent 6,558,829, as applied to claim 1 above, and further in view of Linden (Handbook of Batteries, 2nd Edition).

Faris et al. teach a metal fuel cell system as described hereinabove.

The reference fails to teach or fairly suggest specific time and energy density limitations that the fuel cell system is configured to achieve.

Linden teaches factors affecting electrochemical system performance and specifically teaches that energy densities can be adjusted to a desired output range by manipulating such factors as cell volume and cell shape (see pages 3.17-3.18). The concept of adjusting cell volume and cell shape to achieve a desired energy output range is well known to one of ordinary skill in the art and therefore, it would have been obvious to manipulate these parameters to achieve a desired energy output.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 17-18, 26, & 41-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Faris et al. U.S. Patent 6,558,829, as applied to claims 1 & 40 above, and further in view of Faris et al. U.S. Patent 6,544,678.

Faris '829 teaches a metal fuel cell system as described hereinabove, including providing power to notebook computers and cellular phones (col. 2, lines 45-50).

The reference does not expressly disclose providing back put power in a range from 0.01 hours to 10,000 hours (claims 17-18), enough fuel being provided to operate the battery in a time range of 0.001 to 100 minutes (claims 26 & 41).

Faris '678 teaches that it is conventional to employ metal air fuel cells with enough fuel to supply at least 24 hours of continuous operation for either notebook computer or cellular phone (col. 4, lines 60-65).

Therefore, the invention as whole would have been obvious to one of ordinary skill in the art at the time the instant invention was made because even though Faris '829 does not teach providing power in range of from 0.01 hours to 10,000 hours, Faris '678 teaches that metal fuel cells are capable of providing power for at least 24 hours,

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and the skilled artisan would be motivated to configure the fuel cell of Faris '829 to supply power up to at least 24 hours to obviate the need for additional power supply.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Faris et al. U.S. Patent 6,558,829, as applied to claim 1 above.

Faris teaches a metal fuel cell comprising fuel and reactant storage units as described hereinabove.

The reference is silent to the fuel and reactant storage units having a volume in the range from about 0.001 liters to about 1,000,000 liters.

However, it would have been obvious to one having ordinary skill in the art at the time the instant invention was made to employ a volume in the range from about 0.001 to 1,000,000 liters, since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. In re Rose, 105 USPQ 237 (CCPA 1955). Further, the

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skilled artisan would be motivated to change the size of the containers as a function on the amount power intended to be supplied.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Faris et al. U.S. Patent 6,558,829, in view of Stone U.S. Patent 5,667,908.

Faris teaches a metal fuel cell as described hereinabove.

The reference is silent to a rack for physically supporting the fuel cell and the load.

Stone teaches that it is conventional to employ racks to support electrical equipment in an attempt to minimize space requirements.

Therefore, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the instant invention was made because although Faris does not teach a rack for physically supporting the fuel cell and the load, Stone

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teaches that it is well known to employ racks to support electrical equipment in an attempt to minimize space requirements.

Response to Arguments

Applicant's arguments, see Amendment, filed December 18, 2003, with respect to the rejections of the instant claims have been fully considered and are persuasive. The Applicant incorporated the allowable subject matter of claims 2 into the base claim and rewrote claims 4, 15, 16, 23, 25, 26, 27 & 30 in independent form to overcome the rejections of record. However, upon further consideration, allowability of said claims is withdrawn in view of the rejections cited above.

Conclusions

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Monique Wills whose telephone number is (571) 272-1309. The Examiner can normally be reached on Monday-Friday from 8:30am to 5:00 pm.

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If attempts to reach Examiner by telephone are unsuccessful, the Examiner's supervisor, Randy Gulakowski, may be reached at 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mw

02/23/04

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